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1 Introduction

The purpose of this paper is to investigate apparent cases of sluicing in Mandarin Chinese and to determine the internal structure of the missing materials. Sluicing, first named and discussed by Ross (1969), refers to an elliptical structure in a sentence where only a *wh*-phrase is overtly pronounced. Chinese has a construction akin to English sluicing, as shown in (1).

- (1) a. Amei han **moren** chuqu yuehui;
Amei with someone go-out date
ta babamama xiang-zhidao *shi* **shenme** shihou.
3sg parents want-know is what time
'Amei went out with someone on a date; her parents wonder when.'
b. Abao qu jichang yingjie **moren**, danshi wo wongji *shi* **shei** le.
Abao go airport greet someone but 1sg forget is who Asp
'Abao went to the airport to greet someone, but I forget who.'

Following Ross, it has been argued that the structure of English sluicing is IP deletion at PF subsequent to overt *wh*-movement¹ (Merchant, 2001; Lasnik, 2001). A PF-deletion account, however, faces an insurmountable problem in accounting for apparent sluicing in *wh*-in-situ languages. Japanese has been the most extensively examined of these languages, and it has been claimed that sluicing in Japanese is actually a reduced cleft, based on striking similarities between sluicing and cleft constructions in Japanese (Kizu, 1998; Shimoyama, 1995). Therefore, it is worthwhile investigating whether the same analysis can be extended to Chinese sluicing, since Chinese is a *wh*-in-situ language as well (Huang, 1982; Tsai, 1994). After comparing cleft and sluicing constructions in Chinese in Section 3, I

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¹Although Chung, Ladusaw, and McCloskey (1995) have provided an LF-copying account, Merchant (2001) has convincingly showed that *wh*-movement has occurred in English sluicing. Please refer to his work for the arguments and details.

conclude that Chinese sluicing is not an instance of a reduced cleft construction as found in Japanese. Instead, I propose in Section 4 that Chinese sluicing involves a hidden pro-form rather than ellipsis, and that it can be analyzed as *na shi WH* 'that is WH', where *na* 'that' is left unpronounced. A number of puzzling properties of Chinese sluicing are naturally explained under this analysis.

2 Characteristics of Chinese Sluicing

Chinese sluicing shares some of the properties of English sluicing. For instance, sluicing requires a pronounced antecedent IP (i.e., sluicing cannot be uttered out of the blue), and the inner antecedent (i.e., the constituent whose location is in the preceding clause and whose syntactic category is identical to that of the wh-remnant) of the wh-remnant is indefinite. These two properties are illustrated in (2) and (3).

- (2) a. Moren jiezou le zhe-ben shu, danshi meiren gaosu wo *shi shei*.
 Someone borrow Asp this-cl book but nobody tell 1sg is who
 'Somebody borrowed this book, but nobody told me who.'
 b. # (Context: I was searching for a book of mine.)
 Meiren gaosu wo *shi shei*.
 Nobody tell 1sg is who
 'Nobody told me who.'
- (3) a. Lisi kandao **mo-ge xuesheng**, danshi wo xiang bu dao *shi shei*.
 Lisi saw some-CL student but 1sg think not Asp is who
 'Lisi saw some student, but I can't figure out who.'
 b. *Lisi kandao **mei-ge xuesheng**, danshi Akui xiang bu dao *shi shei*.
 Lisi saw every-CL student but Akui think not Asp is who
 'Lisi saw every student, but Akiu can't figure out who.'

In spite of these similar properties, Chinese sluicing differs from its English counterpart in many respects. First of all, the copula *shi* is required in the sluicing structure with the argument wh-phrases *shei* 'who' and *sheme* 'what' in Chinese, as shown in (4).

- (4) a. Xiaomei mai le yi-jian liwu, danshi ta bu gaosu wo ***(shi) shenme**.
 Xiaomei buy Asp one-cl present but 3sg not tell 1sg is what
 'Xiaomei bought a present, but she didn't (want to) tell me what.'

- b. Xiaomei da dianhua gei moren, danshi wo bu zhidao ***(shi)** shei.
 Xiaomei hit phone to someone but 1sg not know is who
 'Xiaomei called someone, but I don't know who.'

The copula *shi* is optional with other wh-phrases such as adjunct wh-phrases ('why', 'where', etc.) and prepositional wh-phrases ('with whom', 'to whom', etc.), whether there is an antecedent for the wh-remnant in the preceding clause or not, though most native speakers of Chinese agree that with the copula *shi* the sentences in (5) sound much better:

- (5) a. Liang cong-cong qu le riben, danshi wo bu zhidao **(shi)** weishenme.
 Liang RED-hurry go Asp Japan but 1sg not know is why
 'Liang went to Japan in a hurry, but I don't know why.'
 b. Ruguo Abao qu mo-ge difang, ta mama kending zhidao **(shi)** nali.
 If Abao go some-cl place 3sg mom definitely know is where
 'If Abao goes to some place, her mother knows for sure where.'
 c. Xiaomei han moren qu riben, danshi wo bu zhidao **(shi)** han shei.
 Xiaomei with someone go Japan but 1sg not know is with who
 'Xiaomei went to Japan with someone, but I don't know with whom.'

The second difference between English and Chinese is that, unlike English, Chinese disallows the adjunct wh-phrase *zenme(yang)* 'how' in the sluicing construction describing the manner or method of an action. Examples (6a-b) exemplify this constraint.

- (6) a. *Aming zuowan le gongke, danshi ta mei gaosu wo *shi zenme(yang)*.
 Aming finish Asp homework but 3sg not tell 1sg is how
 'Aming finished the homework, but he didn't tell me **how**.'
 b. *Laoban sihu kaichu le mo'en, danshi wo bu zhidao *shi zenme(yang)*.
 boss seem fire Asp someone but 1sg not know is how Asp
 'It seems that the boss fired someone, but I don't know **how**.'

Chinese sluicing also differs from English sluicing in that it renders no sloppy readings, as shown by the contrast between (7) and (8). In fact, the Chinese example in (8) is simply ungrammatical.

- (7) John wondered which novel he should buy, and Bill wondered which dictionary.
 a. Strict Reading: John_i wondered which novel he_i should buy, and Bill_k wondered which dictionary he_i should buy.

- b. Sloppy Reading: John_i wondered which novel he_i should buy, and Bill_k wondered which dictionary he_k should buy.

- (8) *Qiqi xiang zhidao ta yinggai mai nar yi-ben xiaoshuo,
 Qiqi want know 3sg should buy which one-CL novel
 Lisi xiang zhidao nar yi-ben zidian.
 Lisi want know which one-CL dictionary
 a. *Strict reading: Qiqi_i wanted to know which novel she_i should buy, and Lisi_j wanted to know which dictionary she_i should buy.
 b. *Sloppy reading: Qiqi_i wanted to know which novel she_i should buy, and Lisi_j wanted to know which dictionary she_j should buy.

Lastly, the two languages differ in that, unlike English, Chinese requires an explicit *argument* antecedent. As shown in (5), adjunct wh-phrases do not require an antecedent. However, sluicing with an implicit argument of a verb is unacceptable, as shown in (9).

- (9) a. *Wo gege zhengzai jiecia [*e*]-caicai kan *shi shei*!
 1sg brother prog receive guess look is who
 'My brother is receiving (usually customers)—guess who!'
 b. *Zhuren yao zhaodai keren [*e*], danshi ta hai mei shuo *shi shenme*.
 Master want serve guest but 3sg yet not say is what
 'The master is going to serve the guests, but he hasn't decided what.'

It might be clear at this point that we cannot extend the IP-deletion analysis proposed for the structure of English sluicing to that of Chinese sluicing, as it would not account for the obligatoriness of the copula for 'who' and 'what', the ungrammaticality of 'how', and the unavailability of sloppy readings in Chinese sluicing. To spell out just one of these problems, I show in (10) that the presence of the copula cannot be explained by an IP-deletion analysis. The elided clause would have to be identical to the antecedent clause, but there is no copula in the antecedent clause. There is simply no source for the copula on this analysis.

- (10) *Lisi mai-le *yi-jian liwu*, danshi ta bu gaosu wo [*shenme*, [~~ta mai-le t_i~~]].
 Lisi buy-Asp one-cl present but 3sg not tell 1sg what 3sg buy-Asp
 'Lisi bought a present, but she didn't (want to) tell me **what**.'

Interestingly, a copula also appears in Japanese sluicing, and it has been proposed that sluicing in Japanese should be analyzed as a reduced cleft (Shimoyama, 1995; Merchant, 1998; Kizu, 1998; Fukaya and Hoji, 1999;

Hiraiwa and Ishihara, 2002). I thus will examine this alternative analysis for Chinese sluicing in the subsequent section.

3 Chinese Sluicing: Not a Reduced Cleft

In this section I show that there are more mismatches than correlations between sluicing and cleft constructions in Chinese, which makes a reduced-cleft analysis for Chinese sluicing highly unlikely.

3.1 (Pseudo)sluicing in Japanese as Reduced Clefts

(Pseudo)sluicing in Japanese, a wh-in-situ language, resembles English sluicing in that it has a wh-remnant (of any kind), requires a linguistic antecedent, and allows sloppy readings. However, it has been analyzed as deriving from a cleft rather than IP ellipsis since it exhibits properties identical to clefts. Generally a cleft in Japanese has the structure shown in (11), where the focus can be a DP or a PP. *-no* is the nominalization marker, *-wa* is the topic marker, and *da* is the present tense copula.

- (11) [_{CP} [_{IP}_{NP}]-*no*]-*wa* [focus] *da*
 (gap) NM *top* (DP/PP) *copula*

Under this analysis, the structure of (pseudo)sluicing in Japanese is that in (12) *-ka* is the question particle, and the strikethrough part is deleted.

- (12) Dareka-ga kono hon-o yon-da ga, watashi-wa [_{CP}[_{IP}[_{CP}Op_i
 Someone-*nom* this book-*acc* read-*past* but 1sg-*top* that
 [_{IP} e_i kono hon-o yon-da] ~~no_i~~]-*wa* dare_i (da)]-ka] wakaranai.
 this book-*acc* read-*past* NM *top* who *copula* Q know-not
 ‘Someone read that book, but I don’t know **who**_i [_{IP} (it is) [_{CP} that-~~t_i~~ read
 this book]].’

The argument for the reduced-cleft account of Japanese hinges primarily on the parallelism between clefts and (pseudo)sluicing with respect to the optionality of a copula in embedded clefts and in sluiced clauses, as in (13), the resistance of nominative or accusative case-marker attachment to the focus of a cleft and to the sluice, as in (14), and obedience to island constraints, as illustrated by a CNPC example in (15).²

²Kizu (1998) judges these examples as ill-formed, but as pointed out by Fukaya and Hoji (1999) and Hiraiwa and Ishihara (2002), if a case marker (of nominative and

- (13) a. Watashi-wa [_{CP}[_{CP}Op_i [_{IP}e_i sono hon-o yon-da] -no_i]-wa
 1sg-top that book-acc read-past NM-top
 Taroo-(**da**)-to] omou. (Kizu's (8c): embedded cleft)
 Taroo-copula-comp think
 'I think/believe that it is Taroo that read that book.'
- b. Dareka-ga sono hon-o yon-da rashii ga, watashi-wa
 Someone-nom that book-acc read-past seems but 1sg-top
 [dare-(**da**) ka] wakaranai. (Kizu's (8b): pseudosluicing)
 Who-copula Q know-not
 'It seems that someone read that book, but I don't know who.'
- (14) a. Bungo-ni Aya-o syookaisita no-wa [Kota>(*ga)] da.
 Bungo-dat Aya-acc introduced C-top Kota-nom copula
 'It is [Kota]_i that _i introduced Aya to Bungo.' (Merchant's (23a))
- b. Dare-ga Taroo-o nagutta ga, watashi-wa dare(*-ga) ka wakaranai.
 someone-nom T-acc hit-past but 1sg-top who-nom Q know-not
 'Someone hit Taroo, but I don't know who.'
- (15) a. *[_{CP}Taroo-ga [_{DP}[_{CP} Hanako-ga _{t_i} katta toyuu] uwasa]-o
 T-nom H-nom bought Comp rumor-acc
 sinjiteiru no]-wa **kuruma**_i da.
 believe NM top car copula
 'It is a/the car that Taroo believed the rumor that Hanako bought
 ____.' (Merchant's (26))
- b. *Taroo-ga [Hanako-ga nanika-o katta toyuu uwasa]-o
 T-nom H-nom something-acc bought Comp rumor-acc
 sinjiteiru ga, watashi-wa **nani**-ka siranai.
 believe but 1sg-top what Q know-not
 'Taroo believes the rumor that Hanako bought something, but I
 don't know what.' (Kizu's (25a))

Since my focus in this paper is not to prove that Japanese (pseudo)sluicing can be assimilated to clefts, the review above is limited. Please refer to the previous literature for a detailed discussion.

3.2 Dissimilarities between Sluicing and Cleft Constructions in Chinese

If Chinese sluicing is also derived from a cleft construction, it is expected that clefts share the properties of sluicing discussed in Section 2. That is, we

accusative types) is not attached to the wh-remnant, the island effects observed in these sentences are greatly reduced, and the structure is analyzed as my proposal for Chinese sluicing in this paper.

expect that "how" is ungrammatical, sloppy readings are unavailable, and island effects are not observed. As I will show below, however, these predictions are not borne out. Let me start with a brief introduction of Chinese clefts that have the forms exemplified in (16)³.

- (16) a. **Shi** Mali jieshao Yuehan gei Su renshi de.
 Is Mary introduce John to Sue know DE
 'It is Mary who introduced John to Sue.'
 b. **Shi** [_{Focus} *shei*] jieshao Yuehan gei Su renshi de?
 Is who introduce John to Sue know DE
 'Who is it that that introduced John to Sue?'
 c. **Shi** zai Taiwan Yuehan han Su jiehun de.
 Is at Taiwan John and Sue marry DE
 'It is in Taiwan that John and Sue had their wedding.'
 d. **Shi** [_{Focus} *zai nali*] Yuehan han Su jiehun de?
 Is at where John and Sue marry DE
 'Where is it that John and Sue had their wedding?'

As we can see from the translation in (16), the element after the copula *shi* receives the focus of the sentence, and after the verb there is an element *de* that seems to indicate the end of a moved relative clause in the cleft construction. This type of sentence carries pragmatic force and the materials that are not under focus have some presupposition. For instance, (16c) presupposes that John and Sue got married.

If Chinese sluicing is derived from a reduced cleft, then the combination of *shi* and the *wh*-phrase is retained after the operation of deletion on the rest of the embedded clause in (17).⁴

- (17) a. Wo xiang zhidao (**shi**) [_{Focus} *shei*] jieshao Yuehan gei Su renshi de.
 Isg want know copula who introduce John to Sue know DE
 'I wonder who it was that introduced John to Sue.'

³It is also possible for (16b) and (16d) to have the form in the following:

- (16') b. Jieshao John gei Sue renshi de **shi** [_{Focus} *shei*]?
 Introduce John to Sue know DE is who
 d. John han Sue **shi** [_{Focus} *zai nali*] jiehun de?
 John and Sue is at where marry DE

Here I concentrate on the instances where *shi+wh-phrase* is in the front of a sentence, and take this form as the possible source for sluicing, as it is legitimate to delete the rest of the sentence that is a constituent.

⁴When a cleft is embedded, the optionality of the copula does not quite pattern with that of the copula in sluicing. As shown in (17), different from sluicing, the copula is optional with "who", but it is required with "what" and adjunct *wh*-phrases.

- b. Wo xiang zhidao *(shi) [_{Focus} *sheme*] Boon song gei Ching de.
 1sg want know copula what Boon give to Ching DE
 'I wonder what it was that Boon gave to Ching?'
- c. Wo xiang zhidao *(shi) [_{Focus} *zai nali*] Yuehan han Su jiehun de.
 1sg want know copula at where John and Sue marry DE
 'I wonder where it was that John and Sue had their wedding.'
- d. Wo xiang zhidao *(shi) [_{Focus} *weisheme*] Yuehan qu riben de.
 1sg want know copula why John go Japan DE
 'I wonder why it was that John went to Japan.'

When clefts are compared with sluicing, there are three main differences. First of all, while the *wh*-phrase "how" can be used in clefts, it cannot be used in a sluicing sentence in Chinese. The examples in (18) and (19) illustrate the *wh*-phrase "how" used in sluicing and clefts respectively.

- (18) *Zhangsan qu le riben, danshi wo bu zhidao (*shi*) zenme(yang).
 Zhangsan go Asp Japan but 1sg not know copula how(means)
 'Zhangsan went to Japan, but I don't know how.'
- (19) Tingshuo Zhangsan *shi* zenme(yang) qu riben de?
 Hear-say Zhangsan copula how(means) go Japan DE
 'How is it said that Zhangsan went to Japan?'
 (Answers: (i) Method: By airplane; (ii) Manner: In a hurry.)

The *wh*-phrase "how" simply cannot occur in Chinese sluicing, whether the copula is present or not, as shown in (18). In contrast, in clefts the *wh*-phrase "how" is acceptable even without the copula, as shown in (19), and the answers to this question can be a description of the method or the manner of an action.⁵

Secondly, Chinese sluicing cannot be assimilated to clefts because sloppy readings arise in clefts but not in sluicing. For instance, sloppy readings are possible if we fill in what would be the missing cleft in a sluice, as shown in the contrast between (20) and (21).

- (20) Aming zhidao ta weishenme bei ma, Aliang ye zhidao weishenme.
 Aming know 3sg. why BEI scold Aliang also know why
 'Aming_i knows why he_i was scolded, and Aliang_k also knows why he_{i/*k}_i was scolded.'

⁵Unlike Chinese sluicing, the *wh*-phrase "how" is a legitimate *wh*-remnant in Japanese (pseudo)sluicing if it is used to inquire about the means by which the action is carried out (Satoshi Tomioka, p.c.).

- (21) Aming zhidao ta *(shi) weisheme bei ma de,
 Aming know 3sg. copula why BEI scold DE
 Aliang ye zhidao ta *(shi) weisheme bei ma de.
 Aliang also know 3sg copula why BEI scold DE
 'Aming_i knows why it was that he_i was scolded, and Aliang_k also
 knows why it was that he_{i/k} was scolded.'

This lack of sloppy readings seems to be a special property of Chinese sluicing,⁶ not caused by other factors, as Chinese does allow sloppy readings in other forms of ellipsis (e.g. VP ellipsis), and the sloppy reading can even be more salient than the strict reading, as shown in (22).

- (22) Zhangsan xiang quan ban xuanbu tade hao xiaoxi, Lisi ye shi.
 Zhangsan to whole class announce his good news Lisi also did
 'Zhangsan₁ told the whole class about his₁ good news, and Lisi₂ also
 told the whole class about his₂ good news.'

Another intriguing difference between Chinese clefts and sluicing is that syntactic island effects show up in clefts but not in sluicing. The examples in (23) illustrate that sluicing is insensitive to adjunct islands (a-b) and the complex NP constraint (c-d).

- (23) a. Lisi shuo [ruguo **moren** yao qu, ta jiu bu qu],
 Lisi say if someone want go 3sg then not go
 danshi wo wangji **shi** **shei** le.
 but 1sg forget copula who Asp
 'Lisi said that if somebody wanted to go, then she won't go, but I
 forget who.'
 b. Lisi [yinwei Amei mai le **yi-jian dongxi**] bu gaoxing,
 Lisi because Amei buy Asp one-CL thing not happy
 danshi ta bu shuo **shi** **shenme**.
 but 3sg not say copula what
 'Lisi was unhappy because Amei bought something, but she didn't
 say what.'
 c. Lisi jie le [moren_k zuotian zai dian li mai de mo-yang
 Lisi borrow Asp someone yesterday at store in buy DE some-cl
 dongxi_i], danshi ta bu gaosu women **shi** **shei**_k.
 thing but 3sg not tell 1pl copula who

⁶In contrast with Chinese, Japanese (pseudo)sluicing allows sloppy readings in addition to strict readings (Takahashi, 1994; Fukaya and Hoji, 1999).

'Lisi borrowed something that someone bought in the store yesterday, but she wouldn't tell us who.'

- d. Lisi xiangxin [Amei song gei shizhang **moyang tebeide liwu** de
Lisi believe Amei give to mayor some-CL special present DE
yaoyan], danshi ta hai bu queding *shi shenme*.
Rumor but 3sg yet not sure is what
'Lisi believed the rumor that Amei gave the mayor a special present,
but she is not sure about what yet.'

By contrast, clefts in Chinese systematically obey syntactic island constraints; that is, the focus of the cleft cannot be extracted out of an island. Some examples showing this fact are given in (24): (24a) is a case of relative clause islands, (24b), of adjunct islands, and (24c), of complex NP islands.

- (24) a. *Shi [yi-bu che] Lisi pong dao na-ge gei Amei __ de ren.
cop one-cl car Lisi meet Asp that-cl give Amei DE person
'(lit.) It is a car that Lisi met the guy who gave Amei __.'
- b. *Shi [yi-bu che] Lisi zai Amei mai le __ zhihou hen shengqi.
cop one-cl car Lisi at Amei buy Asp after very angry
'(lit.) It is a car that Lisi is angry after Amei bought __.'
- c. *Shi [yi-bu che] Lisi xiangxin Amei mai le __ de yaoyan.
cop one-cl car Lisi believe Amei buy Asp DE rumor
'(lit.) It is a car that Lisi believed the rumor that Amei bought __.'

To sum up so far, this section has presented arguments against treating Chinese sluicing on a par with a reduced cleft due to differences between Chinese sluicing and clefts in the grammaticality of the wh-phrase "how", the availability of sloppy readings, and the amelioration of island effects. Because of these obstacles in using a reduced-cleft analysis for the structure of Chinese sluicing, I propose an alternative analysis for the structure of Chinese sluicing in the next section.

4 Proposal: Silent Pro-form Analysis

I propose that Chinese sluicing has an unpronounced pronoun, and that this pronoun refers to an antecedent in the preceding clause. Depending on the properties of its antecedent, the phonologically null pronoun can be anaphoric to an NP or an IP in the preceding clause. For example, when the antecedent is an NP like *someone*, the hidden pronoun is anaphoric to that NP in the preceding clause; when the antecedent is an IP, the hidden pronoun is anaphoric to the whole eventuality (including states and events) or the

proposition described in the preceding clause. These two possibilities are illustrated in (25).

(25) a. Hidden pronoun → NP

John bought [**a special gift**]₁ (for his girlfriend),
 danshi wo bu zhidao [*pro*₁ shi [**shenme**]].
 but 1sg not know copula what
 '...but I don't know what *that* was.'

b. Hidden pronoun → IP

(John is very gentle most of the time.) [John smacked someone]₂,
 danshi wo bu zhidao [*pro*₂ shi [**weishenme**]].
 but 1sg not know copula why/for what
 '...but I don't know why *that* was.'

The sluiced clauses in (25a-b) can be treated as two embedded questions, "*what was that*" and "*why was that*". In the following I provide evidence for this anaphoric approach to the structure of Chinese sluicing.

4.1 Analogizing Sluicing to the *na shi XP* ('that is XP') Construction

This proposal, that Chinese sluicing involves an anaphoric relationship between a hidden pronoun and an antecedent in the preceding clause, is corroborated by the fact that this hidden pronoun can be spelled out as the pro-form *na* 'that', as shown in (26).

(26) a. Amei mai le yi-jian liwu, danshi ta mei gaosu wo **na shi** shenme.

Amei buy Asp one-cl present but 3sg not tell 1sg that cop what
 'Amei bought a present, but she didn't tell me what *that* was.'

b. Ruguo Lisi qu mo-ge difang, ta mama keding zhidao **na shi** nali.

If Lisi go some-cl place 3sg mom definitely know that cop where
 'If Lisi goes somewhere, his mother knows for sure where *that* is.'

As a simple root clause, *na shi XP* 'that is XP' in Chinese is generally an identification or equational copulative construction. If this proposal is correct for Chinese sluicing, it is expected that when *na shi WH* 'that is WH' is used as a question in response to an interlocutor's statement, it should behave like sluicing with respect to the presence of the copula. This prediction is borne out, as illustrated in (27-28).

(27) Speaker A: Mama zhu le yixie haochide cai.

Mother cook Asp some delicious dish
 'Mom cooked some delicious dish.'

Speaker B: *(Na shi) **shenme**?

that is what

'What was that?'

(28) Speaker A: Baba mama da chao le yi jia.

Dad mom big quarrel Asp one fight

'Dad and Mom had a severe fight.'

Speaker B: a. Zhende ma? (Na shi) **shenme shihou**?

Really Q that is what time

'Really? When was that?'

b. Zhende ma? (Na shi) **weishenme**?

Really Q that is why/for what

'Really? Why was that?'

c. *(Na shi) **zenme(yang)**?

That is how

'How was that?'

In (27), when the *na shi XP* construction involves the wh-phrase *sheme* 'what', the copula cannot be omitted, just as in sluicing. Similarly, in (28a-b), with the wh-phrases "when" and "why," the copula is optionally present, just as in sluicing. Moreover, (28c) shows that the wh-phrase *zenme(yang)* 'how' is not a possible question in this context, just as *zenme(yang)* 'how' is not acceptable in sluicing.⁷

4.2 Resolving Puzzling Data

The proposal that the sluice in Chinese is an embedded "*na shi XP*" is further validated by the fact that it provides natural explanations for the properties of Chinese sluicing in the light of an equivalent construction in English. First of all, the observation that the implicit argument of a verb is a bad antecedent in sluicing follows from the proposal that there is a hidden pronoun in the sluiced clause, as a pronoun needs a linguistic antecedent in the preceding clause. Karttunen (1976:366) claims, "The appearance of an indefinite NP establishes a 'discourse referent' just in case it justifies the occurrence of a coreferential pronoun or a definite NP later in the text." Heim (1982) argues for the same point in her file-card account. Consider the examples in (29):

⁷ *zenme(yang)*-questions of this type involve value judgment (i.e., asking the hearer about his/her opinions) instead of asking about the manner or method of an action.

- (29) a. John_i has a spouse_j; **she**_j is from Delaware.
 b. ?? John_i is married; **she**_j is from Delaware.

In Heim's account, interlocutors in a discourse have a mental file cabinet where they keep track of persons and things mentioned in the discourse. Whenever an indefinite NP is mentioned, they create a file card to represent that NP and keep track of relevant information in the conversation. A pronoun needs a file card to which it can refer back. In (29a), a file card is created for "a spouse" in the first clause, to which the pronoun "she" in the following clause can refer, so the sentence is grammatical. Sentence (29b) is odd because there is no such file card for the pronoun in the second clause to refer to.

In a similar fashion, in Chinese sluicing the hidden pronoun must have an overt linguistic antecedent, represented as a file card, to refer back to. Therefore, if there is a hidden pronoun in the sluiced clause, but there is no explicit antecedent for it in the preceding clause, the sentence is ungrammatical. As a matter of fact, English sentences with the structure I am proposing are plainly bad with implicit arguments, too, as shown in (30).

- (30) a. *John is eating, but I don't know what **that/it** is.
 b. *They are going to serve the guests, but they didn't tell us what **that/it** will be.

Secondly, we observe that the wh-phrase "how" is unacceptable in both English and Chinese, as predicted, in this particular construction, just as *zenme(yang)* 'how' is ungrammatical in Chinese sluicing. The examples in (31) demonstrate that "how" is the only wh-phrase that is unacceptable in the English counterpart if it inquires about the manner or method of the action.

- (31) Speaker A: Someone robbed the biggest bank.
 Speaker B: a. **Who** was that?
 b. **When** was that?
 c. **Where** was that?
 d. ***How** was that?

Without additional stipulations, neither an IP-ellipsis analysis (motivated for English) nor a reduced-cleft analysis (motivated for Japanese) can explain why the wh-phrase "how" is impossible in Chinese sluicing. The proposed analysis, however, offers a natural explanation for this phenomenon. In this proposal, the hidden pronoun refers back to an NP or an IP in the antecedent clause. Therefore, a possible explanation is that there is

some sort of category mismatch between *na* 'that' and the wh-phrase *zenme(yang)* 'how'; for instance, a clause modified by the wh-phrase "how" may not be an NP or an IP but a VP, whereas clauses headed by other wh-phrases are either an NP or an IP.

In addition, at first sight Chinese seems to require an indefinite antecedent in sluicing. However, as Maribel Romero (p.c.) points out, in English *what that is* can take certain definite antecedents, where the referent of the description is unknown, but the sluicing construction cannot. Chinese sluicing patterns with *what that is* in being capable of taking certain definite antecedents, as shown in (32).

- (32) Make-de gongsi yao guiyong wo ban shang zui hao de xuesheng,
 Mark's company want hire 1sg class Prep. most good DE student
 danshi ta mei gaosu wo shi shei.
 but 3sg not tell 1sg is who
 'Mark's company wants to hire the best student in my class, but he
 hasn't told me *who/who that is.'

Another interesting parallelism between Chinese and English regarding the proposed structure is that sloppy readings are also unavailable in the English counterpart, as shown in (33).

- (33) *John_i wants to know which novel he_i should buy, and Bill_k wants to
 know [which dictionary that is].

In fact, like the Chinese example in (8), the English paraphrase with "wh that is" in (33) is also ungrammatical, irrespective of the availability of sloppy readings. In light of this, we can explain why the Chinese counterpart is bad.

Finally, under this proposal, the lack of island effects in Chinese sluicing is also explained. Syntactically, the proposed construction is a simplex clause. Questions like "*what is that*" do not involve movement out of island configurations like relative clauses in clefts, so no island violations are incurred.

5 Conclusion

In this paper, I investigated sluicing in Chinese and showed that previous analyses, the *IP-ellipsis* and *reduced-cleft* analyses motivated for English and Japanese respectively, cannot fully account for the characteristics displayed in Chinese sluicing. I propose an alternative, *na shi WH* 'that is/was WH', for the structure of Chinese sluicing. We might refer to this as *pro-form sluicing*, as it involves an anaphoric relationship between an

unpronounced pronoun in the sluiced clause and the antecedent of the wh-remnant in the preceding clause. Interestingly, the corresponding structure in English exhibits similar properties. The proposed structure offers more plausible explanations for the characteristics of Chinese sluicing.

Needless to say, this paper is limited and many questions remain unanswered. One issue is typology: Neither Japanese nor Chinese, wh-in-situ languages, permit IP-ellipsis-type sluicing. It is possible that this is true of wh-in-situ languages generally. Then the question becomes what properties of a language force a particular analysis of what appears to be sluicing. For instance, Japanese uses reduced clefts, but Chinese does not. Perhaps the structure of clefts in Chinese differs from that in Japanese. Thus the nature of the copula in apparent sluicing constructions in Japanese and Chinese might be distinct. I hope that further research will be able to address this issue. Additionally, it would be interesting to conduct research on languages with both in-situ and movement (e.g., French⁸, Malay) to learn more about the properties and structure(s) of sluicing.

Also, it is interesting to note that the proposed structure for Chinese sluicing exists in English and Japanese. In English, the "that is XP/WH" construction surprisingly exhibits similar properties as its Chinese counterpart, the *na shi XP/WH* 'that is XP/WH' construction. In Japanese, Fukaya and Hoji (1999) noticed that non-case-marked sluicing is a similar construction (and not a reduced cleft; but cf. Hiraiwa and Ishihara (2002) for a proposal relating the two constructions). The *na shi XP* 'that is XP', therefore, seems to be another construction in addition to sluicing, that is quite universal but has different uses and properties across languages.

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⁸Merchant (2001) has discussed some properties observed in French sluicing, but no clear analysis of French sluicing has been published to date.

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